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Thank you for inviting me here today. During my presentation, I want to talk to you about the high and low-tech conservation options available to today's farmers and ranchers. I will explain the benefits and disadvantages of precision agriculture, as well as explore many other conservation practices that farmers and ranchers can implement on their operation.

Precision agriculture usually refers to the use of new technology to help farmers conserve resources and be more profitable. Technology is taking a more substantial role in agriculture with each passing year. Farmers can use precision Global Positioning Systems, or GPS, that guides tractors to drive themselves. Farmers use soil tests and automated equipment to decide how much seed or chemical to put down in a certain area of the field. Combines can monitor yield constantly to make a map of the field based on how much it produces. Ranchers are now using drones to check their cattle, as well as monitor plant height and health. These practices lead to better yields, more bushels per input dollar, or less feed intake per cow. This makes our farmers and ranchers more efficient and profitable in a difficult economy.

Alright, so we understand how precision ag can help our farmers and ranchers, but what might the disadvantages be? One of the biggest disadvantages of this equipment is the cost. For many small and medium-sized operations, they do not farm enough acres or run enough animals to cover the expenses. Not only do you have to purchase the computer software to utilize your data, but all of your equipment, from the tractor to the combine, has to have the software to read the data and perform the programmed functions. For this reason, the high-tech equipment is not for everyone. Another disadvantage of this equipment is that it may take several years before you have sufficient data to make changes. The programs need to be able to average a few years of data to develop a sufficient map of your acres. It requires a large time commitment to analyze the data collected from this technology. This may mean your operation requires another person to review the data and decide how best to apply the information gathered. Finally, you may also have to do precision soil tests on your land, which is time-consuming and expensive.

I have identified some disadvantages of precision agriculture. However, you don't have to own high-tech equipment to conserve resources. There are low-cost conservation options for small and medium-sized operations. As a farmer, you can monitor your sprayer boom height and chemical concentrations when spraying as well as plant seed populations when planting. Farmers can also plant cover crops, reduce tillage equipment use, and change their crop rotation schedule to include three or four crops. These practices will keep important nutrients and water abundant in the soil. Farmers might also do well waiting a few years, as technology often costs far less several years after it is first introduced. Farmers and ranchers can also work together by putting livestock on harvested crop ground, like cornstalks. Not only is the feed source valuable to the rancher, but the hoof action and manure is also helpful to the cropland. Ranchers can use intense grazing, a practice which involves using many small paddocks of pasture and grazing them for a short time, a few days up to a week or two, during which time the animals completely graze the paddock. Then, that paddock is at rest for the remainder of the grazing season. If intensive grazing is not an option, monitoring plant health and height can be an effective practice

to determine when to move their livestock to the next location. Producers can manage and monitor livestock temperature as well as drinking and grazing habits with new smart tags.

During my presentation today, I discussed the high and low tech conservation options available to today's farmers and ranchers. I discussed the benefits and disadvantages of precision agriculture and low-tech, low-cost conservation options that are better suited to small and medium-sized operations. Thank you for listening to my presentation today.